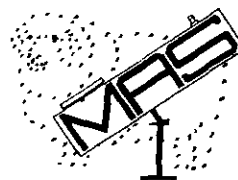


MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



# PRIME FOCUS

Volume 8 Issue 1

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## President's Report

### It Happens Tonight!

A big welcome to all members and guests here tonight. A little while back an invitation was extended to Dr Fred Watson from the Anglo-Australian Observatory to come along and pay us a visit. We are most grateful that Fred has accepted our request and we are thrilled to have him here tonight as our special guest speaker.

Many of us have met Fred before and for those who haven't I'm sure you will appreciate the opportunity to make his acquaintance.

### Membership Fees

We recently took a look at our financial position and did some forward projections. With expected increases in insurance premiums,

government lodgement fees and sundries we realised we would be flying close to the bone. It is prudent management to have income exceed expenditure. As a society our margins have always been limited and the projection is that we will be unable to reach surplus in 2003/2004.

We have made a decision to increase membership fees by \$5.00 across the board effective from next month when renewals are due. It is our second price rise in over 7 years of operations and we thank you for your understanding in this matter. A listing will be found elsewhere in the journal.

### Last Time

I really enjoyed last months meeting, Ursula displayed her telescope, Bruce gave us description of his recent outback adventures chasing

the Solar Eclipse and Dick informed us of the latest news in the astronomical world. Well done to you all and thanks for a great night!

We have still been unlucky with the weather and hope for clear skies. With that thought in mind I made my way to the last Forest night in a reasonably happy mood. The thought of good friends and clearing skies had occupied my thoughts.

It was after all a pretty tough week, what with the fires and the destruction they caused, not to mention that tragic train derailment, a night stargazing in the forest might be just what the doctor ordered. The road ahead was almost dark and some strange shapes were at the side of the road. The next minute... bang!

It would seem that I had a rather close encounter of the marsupial kind. You know the

story, insurance claim and a busted fender, blinker system not working, much inconvenience and sadly one demised kangaroo.

The rest of the night was spent in a rather sour mood in which I focused not on the stars but on my own misfortune. The next morning my mobile phone rang with the news that the Space Shuttle had exploded just minutes from touch down, all onboard were lost. It makes you think about how fragile we are as human beings, how lucky we can be when we have good health, good friends and the minor inconveniences in life are, well, very minor. What got me thinking was that I could have lost control on the dirt road and wrapped myself around a tree. It all seemed to be put into some perspective, a tough start to the year continues and uncertainty lies ahead.

### Onward and Upward

- 01/03/2003 The Forest
- 08/03/2003 The Oaks
- 17/03/2003 General Meeting
- 05/04/2003 The Oaks
- 12/04/2003 Possible Public night

In finishing off this report I wish all of you safe and happy times in all your endeavours and look forward to the upcoming stargazing nights, if the weather could be so kind

Regards  
Noel Sharpe  
President

### **Fleeting Images but Lasting Impressions**

My friend Bob and I took a week's leave and traveled about 2,000km from suburban Sydney to outback South Australia, to witness an astronomical event that would last less than a minute (in fact, from where we ended up the event was only 29 seconds). This event was a long anticipated solar eclipse.

Our trek to observe the eclipse was longer than expected. After we left Port Augusta, where we stayed overnight on the second day of our trip, we headed for Ceduna across the Eyre Peninsula. While traveling we were paying close attention to the weather and eclipse reports on Radio National as locals warned that there might be some dirty weather at Ceduna. Fears of possible cloud cover over Ceduna were on the radio reports as well. This was enough to scare us off, so halfway across the Eyre Peninsula we turned around and headed for Woomera where we were assured of clear skies. Fortunately we had allowed ourselves plenty of time for just such circumstances.

We arrived early the next day at the site called Wirramina Station. We thought it would be a good vantage point as the land was flat with no large trees that might obscure the view. Then we waited for several hours. Later in the day

more people arrived, including busloads of Japanese and Canadians armed with telescopes, cameras and tripods, hoping to capture some images of the event.

I wanted to see this eclipse as it is one of the few opportunities that anyone may get to view such a phenomena. However I had my doubts as I did not know what to expect or whether such a long trip was worth the effort for us, especially for something that was to be so fleeting. But when the moon's shadow came racing over us at 32,000km per hour and gave us such a show, I knew the answer.

The images were fleeting but the impressions they left us were lasting. Twenty nine seconds of totality was far too short a time to take in the images that were just so overpowering.

As the moon's profile raced across the Sun and had nearly swallowed up the Sun's disk, for a tantalizing fraction of a second Bailey's Beads appeared. Then before you could gasp in awe it was replaced by ghostly streamers of ethereal light. This was the corona, the outer atmosphere of the sun normally invisible due to the glare of the disk. Also surprisingly I could see the solar flares. That appeared as small red patches at the surface of the eclipse. Then just as suddenly Bailey's Beads reappeared and

disappeared again as the moon slid out of the Sun's disk. Totality was over.

But there was a last hurrah. An astronomer on ABC radio said one effect that may be visible when an eclipse is low in the sky is (as I understood it) a reflection of the eclipse's shadow racing into the heavens on the opposite side of the eclipse immediately after totality. He said a religious friend of his called it the finger of God. I remembered this and straight after I took my eyes away from the beads I looked behind. It appeared there was a cone of shadow speeding away from us.

I hadn't planned to take photographs, I just wanted to experience it. However, I came prepared with the f-stop and shutter speed adjusted so as to capture the corona just in case I had the urge to photograph it. And I did get the urge.

Though totality was by far the climax of the event, it was not the only thing that impressed us. The partial phases created a strange reddening almost otherworldly light over the landscape as the sun was being swallowed up. Even our shadows were affected. It looked as if one half was sharp and the other fuzzy. It was quite weird to see our shadows.

If I had seen the finger of God then I had also seen Him displaying the ring that fits it

in the form of an eclipse. What a sight.

Having seen my first eclipse I feel quite privileged and I also understand why some people become dedicated eclipse chasers. Having seen one, you want to see more.

See you all in Cairns for the next eclipse in ten years time. It will be worth the wait and the trip.

Bruce Reardon

### **Boy With a Telescope**

(contributed by Dick Everett)

Recently I came across a small book of poetry written by South Australian poet Jan Owen. It contains some true gems, but I was immediately attracted by the title, 'Boy With A Telescope'. I thought you might enjoy this, the title piece.

#### *BOY WITH A TELESCOPE*

For Andrew

Shadowy neanderthal, his silhouette  
straightens to shake a fist  
at the prowling clouds  
then down again eagerly  
to Saturn's swirling rings  
or Jupiter trailing his brood of moons.

The warm room of the family  
is galaxies away;  
tonight he charts the distance  
and the dark,  
burning with a cool celestial  
fire;  
names like charms spin in his  
head-

Betelgeuse, Rigel, Algol the  
demon star,  
Draco, Antares, Aldebaran-  
they peal like bells in the cold  
air.

He calls me over to see  
the open cluster in Scorpio.

(sic)

I squinch my face against  
metal, admire a blur;

"No, no, through the

secondary lens, down here."

He puts me in focus. I crouch  
to a pinpoint.

"Seven thousand five hundred  
light years away!"

His voice is religious with  
awe.

The immensity of the night,  
these tiny sparks

taken on trust, we share.

I touch his arm and go, but  
look back from the door.

He is swivelling to another  
constellation,

checking the finder, muttering  
to himself;

and may he always stand so-  
a little to one side of what he  
loves;

earn a clear view  
through delicate adjustments,  
steady care;

meet solitude and setbacks,  
just enough,

to fine out his desires  
and assess them with keen  
eyes.

May his mind reach, tactile as  
fingertips,

to the sharp braille of the  
skies.

**Jan Owen**

## Cyberastronomy

For those of our members who have access to the internet but are telescopically disadvantaged, or, join the club, meteorologically disadvantaged, the online astronomy offerings on the internet are worthy of further investigation.

From simple email news bulletins to amazing picture galleries provided by most any research facility, the information available is simply astonishing. In addition, lots of programs are accessible as freeware (yes no cost) or shareware (small charge, sometimes voluntary). I have assembled this suggested starter file, check out their links to expand your surfing from there:

### **Astronomy Magazine**

Website. Sign up for free weekly news  
[www.astronomy.com](http://www.astronomy.com)

### **Sky and Telescope**

**Magazine Website.** Several free alerts + newsletters. Interactive skychart for your site  
[skyandtelescope.com](http://skyandtelescope.com)

### **Astronomy Daily.**

Personalised website with observing info, news and weather for your site with many links  
[www.astronomydaily.com](http://www.astronomydaily.com)

**Heavens Above.** No not Bob Bee, but predictions for observing satellites of all

descriptions, even Iridium flares  
[www.heavens-above.com](http://www.heavens-above.com)

**JPL Home Page.** Has links to all JPL managed missions most of which have Internet newsletters  
[www.jpl.nasa.gov/index.cfm](http://www.jpl.nasa.gov/index.cfm)

**AAO Siding Spring.** The premier Oz observatory, wonderful images, news of Australian astronomers and projects  
[www.aao.gov.au](http://www.aao.gov.au)

**Other Observatories:** ESO, Gemini, Hubble and NOAO all have excellent websites, search on those names. ESO has a good email newsletter

**Astronomy Picture of the Day (APOD):** Discover the cosmos! A new picture every day with expert explanation.  
[antrp.gsfc.nasa.gov/apod/astropix.html](http://antrp.gsfc.nasa.gov/apod/astropix.html)

### **Observing/Mapping Sites**

**Inconstant Moon:** Selenographer's delight, everything you ever wanted to know about you know what.  
[www.inconstantmoon.com/](http://www.inconstantmoon.com/)

**SEDS:** Too much to list – the best Messier Site, constellations, web nebs, NGC 2000 browser, Nine Planets the best Solar System Site and much more.  
[www.seds.org](http://www.seds.org)

### **Skyview Virtual**

**Observatory:** Generates images of any part of the sky at wavelengths from Radio to Gamma Rays.  
[skyview.gsfc.nasa.gov](http://skyview.gsfc.nasa.gov)

**American Association of Amateur Astronomers:** Lots of observing programs and lists. [www.corvus.com](http://www.corvus.com)

**Astro Tips – Astronomy Freeware:** Download programs including fully featured sky charting suite with star catalogues, or comprehensive Moon mapper with images  
[www.stargazing.net/astrotips/English/index.html](http://www.stargazing.net/astrotips/English/index.html)

Some material to prepare for in depth discussions at cloudy observing sites:

### **Ned Wright's Cosmology Tutorial**

The wright stuff, direct from UCLA Cosmology lecturer Ned Wright  
[www.astro.ucla.edu/~wright/cosmology.htm](http://www.astro.ucla.edu/~wright/cosmology.htm)

Dick Everett ■

### **Club Fees for 2003**

**Once-off Joining Fee: \$10**

**New annual fees, up \$5 to:**

**Members : \$30**

**Family Members: \$50**

**Student Member: \$20**

**Pensioner member: \$20**

**Mail-out of Prime Focus: \$6**

## What IC This Month

February 17 – March 16, 2003

### Quick Sky Tour

What a wealth of bright stars in this month's sky. Red Aldebaran and Betelgeuse, golden Canopus, white Rigel, Procyon, Regulus. Spica and the False Cross, and sizzling blue-white Sirius and Gamma Velorum. Later Spica and Arcturus rise to greet us also.

### The Moon Diary

17/2 Full Moon

24/2 Last Quarter

25/2 Waning Last Quarter above Mars in morning sky.

28/2 Very thin crescent at right of Venus before sunrise.

3/3 New Moon

11/3 First Quarter

11-12/3 FQ Moon below Saturn in Taurus

14-15/3 Waxing FM below Jupiter and Beehive Cluster

### Evening Sky Planets

**Saturn** rises during daylight in Taurus and remains in the vicinity of M1. It will set about midnight and earlier as the year draws on.

**Jupiter** is in Cancer and past the Beehive by 3° to the east now. However it will return to its westward progress and pass close to M44 once again in March. Past opposition Jupiter still appears large and bright at 43 arc seconds.

**Mars** will rise at midnight in Ophiuchus and proceed eastward into Sagittarius. Between 5-7/3 it will pass near M20 the Triffid Nebula and M8 the Lagoon. During March it will follow the path of Venus through the star fields of the galactic centre, coming close to M22 on the 18<sup>th</sup>

### Morning Sky

**Venus** rises in Capricornus moving down to Aquarius during late March. Neptune will be visible in a telescope very close to Venus on the 13/3, but the glare of V. will make it difficult to spot.

**Mercury** rises very close to the sun and will disappear in the sunrise to reappear in the evening sky early April.

**Neptune** and **Uranus** remain in Capricornus and Aquarius respectively and have visits from Venus during March

**Comet C/2000 HT50** may be visible at 10<sup>th</sup> mag in Monoceros. It sets in the early morning hours.

**Meteors** It may still be possible to see a few of the *Alpha Centaurids* mentioned last month.

Between 25/2 and 22/3 the *gamma Normids* are visible after midnight. A low hourly rate makes them hard to identify but some bright yellow-orange streakers may leave trains.

### Portraits in the Sky

#### *CARINA - "The Keel of Argo Navis"*

Argo Navis was the fifty-oared ship that Jason and fifty Greek heroes used to recover the Golden Fleece. Built by Argus and piloted by Canopus, with Castor and Pollux, (the Gemini twins) as part of the crew, they sailed to Colchis, at the eastern side of the Black Sea, where the Golden Fleece was guarded by a fierce dragon. After many adventures on the way, Jason stole the fleece and they all sailed back home.

Athene recognised their heroic deeds by placing their ship in the sky below and east of Canis Major.

It was Edmund Halley in his catalogue of southern stars, *Catalogus Stellarum Australium* (1679), that introduced Argo Navis to the world.

In 1763 Nicolas Louis de Lacaille's posthumous work *Caelum Australe Stelliferum* divided the gigantic Argo Navis into three constellations: Carina (the Keel), Puppis (the Stern, or Poop deck), and Vela (the Sail). To this day the Bayer (Greek) letters are shared with Vela and Puppis. This is particularly apparent in the False Cross area. But the most interesting of the three is Carina.

**Carina** is home to **Canopus** "The Helmsman", second brightest star in all the heavens. Named after the pilot of the fleet of ships King Menelaus took from Sparta to Troy in his fight for beautiful Helen. He won Helen for his queen, but Canopus died in Egypt after the fall of Troy.

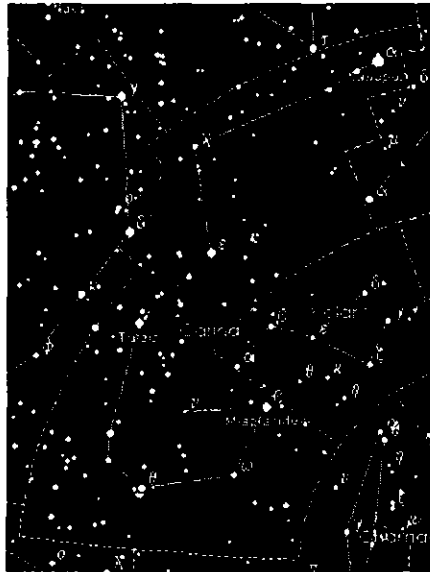
Canopus (alpha Carinae) was known in antiquity as the Star of Osiris and worshipped in many ancient cultures. This was the star that Posidonius used in Alexandria, circa 260 BC, to plot out a degree of the Earth's surface. Canopus still functions as a guide star in celestial navigation for NASA missions.

Canopus rising announces to the southern hemisphere the beginning of summer, passing overhead on December 27. Anyone living above latitude 30° north, that is Lisbon or San Francisco, cannot see the star at all.

Canopus is a golden-white supergiant about thirty-five times the diameter of the Sun with a luminosity of 12,000. Estimations for the distance of Canopus from us varied wildly for years but the Hipparcos satellite has calculated the distance at 313 light years.

The most interesting object is at the opposite end of the constellation, **Eta Carinae** a mystery star varying in magnitude from a brilliant -0.8 in 1843 to a rather dim 7 in the mid 1870s. Its present

visual magnitude isn't much brighter, at only 6.21. The star's absolute magnitude has been difficult to assess, ranging from -5.3 to -3.3.



The star is considered to be either very young, not yet on the main sequence, or very old. Currently the belief is that Eta is old and will eventually die in one of the brightest supernovae ever seen.

Eta Carina is found in the nebula **NGC 3372**, The Keyhole Nebula. The diffuse nebula has great complexity and beauty. While the nebula is composed of brightly glowing gas, there are darker areas which serve to break the nebula into individual islands.

The most dramatic of these darker areas has been labelled the Keyhole because of its shape. A telescope will show that the orange-red colour of Eta is a small nebula of red light called The Homunculus surrounding the star.

### Double stars in Carina:

Less than a degree to the north and 5 mins to the east from Eta is **Dunlop 94** a 5.0/8.0 red and white double star, 14.5" easily separated.

**Upsilon Carinae** is another pleasant easily resolved binary of two white stars 3.0, 6.0, and a separation of 5.0". Located at the point of a 3° triangle made to the south of *epsilon Carinae* and **NGC 2516** is **Rmk 8** two stars 5.0, 8.0, 4" apart. Difficult but not too hard.

### Deep Sky Objects:

**NGC 2516**. A very nice open cluster below the False Cross of perhaps a hundred stars. 2516 has a colourful long history with MAS observers. With a red giant at the centre, it's estimated at 1200 light years away.

**NGC 3532**. located three degrees WNW of eta Carinae is a spectacular cluster of four hundred or so mostly bright, sparkling white, A class stars. John Herschel thought this was the finest cluster he'd ever seen. Low magnification is desirable.

**NGC 3293** just 2° north of 3372 is a tightly packed cluster that magnifies well. An orange star makes the cluster quite attractive.

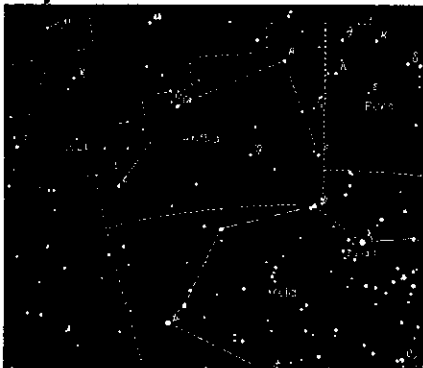
**IC 2581** about 1° north of 3293 has about 25 stars with a bright foreground star seeming to dim the cluster behind.

**IC 2602** is a group of thirty or so stars some 700 light years away with *theta Carinae* as the brightest member. Some call it the 'Southern Pleiades'.

Roughly midway between *iota Carinae* and 3372 is **NGC 3114**. Easily seen with naked eye and a good subject for binoculars looking like a flattened S.

## **ANTLIA** "The Air Pump"

Antlia is one of many constellations introduced by Nicolas Louis de Lacaille in the mid eighteenth century, designed to fill in the southern hemisphere. The constellation commemorates the air pump, which had been recently invented by Robert (Charles?) Boyle.



Antlia is located in a rather bleak and lonely part of the southern hemisphere. It takes some imagination to find a "pump" here, not surprising perhaps, given the small number of Bayer stars.

### **Double stars:**

**Zeta<sup>1A</sup> and Zeta<sup>1B</sup>** Antliae form a wide binary: 6.4, 7.2; separation 8".

**Eta Antliae** is an even wider binary with faint companion: 5.0, 12; separation 31".

### **Deep Sky Objects:**

Antlia has many spiral galaxies, however they are all quite faint at 11+ magnitudes. The bright "Eight Burst Planetary Nebula", **NGC 3132**, right on the border, is sometimes assigned to Antlia, however this is usually given to Vela. Just over a degree east of 3132 is a very wide apparent double and a further 1.5 deg east an 11<sup>th</sup> magnitude elliptical galaxy with a bright core can be found.

## **COLUMBA NOAE** "Noah's Dove"

Invented in 1592 by Dutchman Petrus Plancius represents the Dove that was released from Noah's Ark to find dry land. Another story links it with the dove sent ahead of Jason and the Argonauts to help them pass safely through the Clashing Rocks at the entrance to the Black Sea. The constellation is placed near the stern of the ship Argo north of Canopus. The figure viewed looking south, looks like a side view of a seagull landing.

**α** (Phact) is a blue-white 2.6 mag. star making the eye of the bird. 2 deg to the right is **ε** making the tip of the beak. **β** (Wezn) is a 3.1 mag yellow giant star at the base of the upraised wing, while **γ** to the left with **κ** and **δ** trace the

flapping wing. 7 deg south of **β** is **η** making the tip of the tail feathers.

### **Double Stars**

John Herschell found at least two binaries and other searchers have added to the list. 1° west of *epsilon* is **h3760** a triple system 7.7, 8.3, with 7" separation, and a 10.0 mag. component 26" further away.

3° NW of *nu Puppis* is **h3860** 7.0, 8.6, at 8".

In the same field of view with a 25 mm eyepiece 0.5° south and a little west of *beta* is **Cordoba 33** two 9<sup>th</sup> mag stars separated by a close 3.4". Although faint you should be able to find them.

6° due south of *epsilon* and 5.5° west of *eta* is **Dunlop 22** a fine double 7.0, 8.0, at 7.5" apart.

### **Deep Sky Objects**

7° from **α** in line with **ε** is **NGC1851** a 7<sup>th</sup> mag GC visible through binoculars and small apertures as a fuzzy spot. Bigger scopes get a better view.

3° NW of 1851 are **NGC1792** 10.2 mag. and **1808** 9.9 mag. two spiral galaxies. Although 40 mins apart they are interacting.

Columba also has one of three so-called "runaway stars". The 5<sup>th</sup> mag blue star *mu Col* with AE Aur and 53 Ari. seem

to be diverging from a point in Orion with a speed of around 100 km/s. A theory claims that these stars once belonged to a quadruple star system. The fourth member exploded in a supernova about three million years ago pushing the other three stars away in different directions. *Mu Col* can be found 2.5 degrees NE of *alpha Col*.



Good seeing IC

## FANS 2003

FANS stands for "Festival of Astronomy North Sydney" and is a huge public astronomy event held on North Sydney Oval with telescopes from all the Sydney, Wollongong and Newcastle amateur societies.

MAS had 5 telescopes there last year (out of a total 50 telescopes) and it was a huge success. An estimate of the number of public was around 3,500. That event was actually a 'dry run' for the big event – FANS 2003, which is timed to coincide with the International Astronomy Union General

Assembly (IAU GA), a great gathering of professional astronomers from all around the world.

The idea is to use the publicity from the gathering of astronomers (**aside**: what's the collective noun for astronomers? Perhaps you can suggest one. How about 'a cluster of astronomers' or 'a cosmos of...'? ) ... where was I... oh yes, use the publicity from the gathering of astronomers to direct public attention to the activities of amateur astronomy societies, as well as vice versa. It will also happily be close to the much anticipated opposition of Mars, a feature to highlight with the public. With additional publicity of IAU AG and FANS, they will be expecting in the order of 5,000 people to turn up.

The event will be in July. The actual date has been a bit of a football, having to avoid conflict with other major events in Sydney, the football at the North Sydney Oval, etc.

As of date of typing this article, the latest date for FANS is now Sunday 20<sup>th</sup> July. (Yes, Sunday.) I believe that is also the last day of the July school holidays.

The committee of MAS has indicated to the organising committee of FANS that we will give it our best support. Even though it is held on the other side of Sydney, for those of us who attended last year, it was a great experience and a

lot of fun. MAS held its head high amongst a lot of much larger societies who sent fewer telescopes than us.

The purpose of this article is to alert all our members of the date for FANS, our intention to support it, and a call for all members who have a telescope to give serious consideration to taking it on that night. The whole event is extremely well organised, with designated locations on the oval set out for each scope, a designated object for each scope to view (and for the scope owner to have studied up, as necessary, in order to tell the public about it.)

The committee has agreed to cover members' costs of motorway and bridge tolls and any parking fees (though none of us ended up having to pay for parking on the 2002 night.)

Please keep this in mind and a spot in your diary. There will be more information as it approaches.

Bob Bee ■

